POWERTECH (USA) INC.

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MINERALS & MINING PROGRAM

August 20, 2008

Mr. Mike Cepak
South Dakota Department of Environment
and Natural Resources
Office of Minerals and Mining
523 East Capitol
Joe Foss Building
Pierre, SD 57501-3181

Dear Mr. Cepak:

RE: Dewey-Burdock Large-Scale Mining Permit

Powertech (USA) Inc. will be applying for a large-scale mining permit on land known as the Dewey-Burdock property in parts of Custer County and Fall River County, South Dakota. Actual mining will affect approximately 1,600 acres.

As the first phase of the permitting process, the required "Request for Determination of Special, Exceptional, Critical, or Unique Lands and Intent to Operate" form, a map showing the location of the proposed permit land, narratives describing the mining operation, and assessment of special, exceptional, critical, or unique status are enclosed. Documentation from the Custer and Fall River County Register of Deeds offices stating this information is on file for public viewing will be provided, when available.

If you have any questions or require further information, please contact me at 605.662.8308.

Sincerely,

Mark Hollenbeck
Project Manager

MH:llf

DEWEY-BURDOCK
POWERTECH (USA) INC. URANIUM PROJECT

Dewey-Burdock Operations Office
310 Second Avenue - PO Box 812 - Edgemont, SD 57735
605-662-8308 www.powertechuranium.com

Enclosure

cc: Mr. Richard Blubaugh, Powertech (USA) Inc.
Mr. Richard Clement, Powertech (USA) Inc.
Mr. Paul Bergstrom, Knight-Piesold
Mr. Cory Foreman, RESPEC
Mr. Bruce Penner, South Dakota State Historical Society
Ms. Patty Van Gerpen, South Dakota Department of Tourism
Mr. Peter Jahraus, U.S. Department of Agriculture
Mr. Paul Caughlin, U.S. Department of Game, Fish, & Parks
Mr. Stan Michals, U.S. Department of Game, Fish, & Parks
Mr. Mike Fosha, Archaeeological Research Center
Custer County Register of Deeds
Fall River County Register of Deeds

Dewey-Burdock Operations Office
310 Second Avenue - PO Box 812 - Edgemont, SD 57735
605-662-8308 www.powertechuranium.com

Department of Environment and Natural Resources
Minerals and Mining Program
Joe Foss Building
523 East Capitol Avenue
Pierre, South Dakota 57501-3182
Telephone: (605) 773-4201 Fax: (605) 773-5286

RECEIVED
AUG 2 1 2008
MINERALS & MINING PROGRAM

REQUEST FOR DETERMINATION SPECIAL, EXCEPTIONAL, CRITICAL, OR UNIQUE LANDS AND NOTICE OF INTENT TO OPERATE

Name of Operator: Powertech (USA) Inc.

Office Address: 310 2nd Ave / P.O. Box 812
Edgemont, SD 57735

Telephone: (605) 668-8308

Local Address: Same as Office Address

Telephone: Same as Office Telephone

Legal Description: See Chapter 2.0, Proposed Mining Area, in the Attached Document.

County: Fall River and Custer

Name and Address of Surface Owner: See Appendix A in the Attached Document

Name and Address of Mineral Owner: See Appendix A in the Attached Document

Name and Address of Surface Owners Within 500 Feet of the Proposed Mining Operation

See Appendix A in the Attached Document

I declare and affirm under the penalties of perjury that this claim (petition, application, information) has been examined by me, and to the best of my knowledge and belief, is in all things true and correct.

Signature: Mark Wilmot

Title: Project Manager Date: 8-20-08

STATE OF South Dakota

COUNTY OF Pennington

On this 20th day of August, 20 08, before me personally appeared Mark Hollenbeck who acknowledged himself to be Project Manager (Title) for Powertech (USA) Inc. (Operator)

and that he is authorized to execute this Request for Determination of Special, Exceptional, Critical, or Unique Lands and Notice of Intent to Operate for the purposes contained therein.

Lorinda K. Talley

Notary ~~Public~~

My Commission Expires LORINDA K. TALLEY, Notary Public
Pennington County, South Dakota
My Commission Expires June 6, 2014

SEAL

FOR DEPARTMENT USE ONLY

The land described in this Request for Determination of Special, Exceptional, Critical, or Unique Lands and Notice of Intent to Operate ( ) is (X) is not eligible for inclusion on the list of special, exceptional, critical, or unique lands.

/s/ Date December 31, 2008

Secretary, Department of Environment and Natural Resources

Operator Appeal Date January 7, 2009

Intervenor Contest Date February 19, 2009

The land described in this Request for Determination of Special, Exceptional, Critical, or Unique Lands and Notice of Intent to Operate ( ) is (X) is not eligible for inclusion on the list of special, exceptional, critical, or unique lands.

/s/ Date February 19, 2009

Chairman, SD Board of Minerals and Environment

DEWEY-BURDOCK LARGE-SCALE MINING PERMIT REQUEST FOR DETERMINATION OF SPECIAL, EXCEPTIONAL, CRITICAL, OR UNIQUE LANDS

Topical Report RSI-2001

by

Powertech (USA) Inc.
P.O. Box 812
Edgemont, South Dakota 57735

prepared for

South Dakota Department of Environment
and Natural Resources
523 East Capitol Avenue
Pierre, South Dakota 57501

August 2008

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1.0 INTRODUCTION

This document is submitted in support of Powertech (USA) Inc. (Powertech) to obtain the required permits and licenses to construct and operate a uranium in situ recovery mine under Administrative Rules of South Dakota (ARSD) 74:29:11.

Per South Dakota regulations, a Large-Scale Mine Permit is required for operations that mine and disturb more than 10 acres of land and extract more than 25,000 tons annually and for any operation that use cyanide or other chemical or biological leaching agents. A prospective mining operator must request the South Dakota Department Environmental and Natural Resources (SD DENR) to determine whether or not the lands included in the proposed mining operation constitute special, exceptional, critical, or unique lands by submitting a notice of intent to operate to the department. To fulfill the requirement, South Dakota Codified law (SDCL) 45-6B-81 and ARSD 74:29:10:02 requires the operator to submit a *Request for Determination of Special, Exceptional, Critical, or Unique Lands*. The Agency requires submittal of the request at least 60 days before the submittal of the permit application.

1.1 LAND CLASSIFICATION

SDCL 45-6B-33 specify the following classifications:

1. Land is unsuitable for mining if the following conditions cannot be satisfactorily mitigated:
    a. Reclamation of the affected land pursuant to the requirements of this chapter is not physically or economically feasible.
    b. Substantial deposition of sediment in stream or lake beds, landslides, or water pollution cannot feasibly be prevented.
    c. The land to be affected by a proposed mining operation includes land that is special, exceptional, critical, or unique as defined in § 45-6B-33.3 and satisfactory mitigation is not possible.
    d. The proposed mining operation will result in the loss or reduction of long-range productivity of aquifer, public and domestic water wells, watershed lands, aquifer recharge areas, or significant agricultural areas.
    e. The biological productivity of the land is such that the loss would jeopardize threatened or endangered species of wildlife indigenous to the area.
    f. The board finds that any probable adverse socioeconomic impacts of the proposed mining operation outweigh the probable beneficial impacts of the operation.

2. Land is deemed to be special, exceptional, critical, or unique if it possesses one or more of the following characteristics:

   a. The land is so ecologically fragile that, once it is adversely affected, it could not return to its former ecological role in the reasonably foreseeable future.

   b. The land has such a strong influence on the total ecosystem of which it is a part that even temporary effects felt by it could precipitate a systemwide ecological reaction of unpredictable scope or dimension.

   c. The land has scenic, historic, archaeological, topographic, geologic, ethnologic, scientific, cultural, or recreational significance.

1.2 CLEARANCE

The ultimate goal of this process is to identify those lands, if any, requiring exclusion from the mining operations. State Rule ARSD 74:29:10:15 defines the stage when mining is deemed applicable for the land under consideration as "Clearance" with the following language:

"The lands described in a notice of intent to operate shall be considered cleared for special, exceptional, critical, or unique land characteristics if the department determines that the lands do not constitute special, exceptional, critical, or unique land and no nominating petitions pertaining to lands described in the notice are filed. The clearance shall remain in effect for seven years. If a mine permit application is not submitted within the seven-year period, the board may declare the clearance void and the lands may be reevaluated for special, exceptional, critical, or unique land characteristics."

1.3 SCOPE OF WORK

Powertech conducted the following assessments to help the SD DENR determine the presence of special, exceptional, critical, unique, or unsuitable lands within the boundaries of the proposed mining area:

- Scenic
- Historic
- Archaeological
- Topographic
- Geologic
- Ethnological
- Scientific

- Cultural
- Recreational.

Chapter 4.0 provides a detailed summary of these activities.

2.0 PROPOSED MINING AREA

The proposed mining area is located approximately 13 miles north-northwest of Edgemont, South Dakota, in parts of Custer and Fall River Counties and covers approximately 9,425 acres. Figure 2-1 outlines the proposed mining area pursuant to ARSD 74:29:10:03 and Appendix A lists surface and mineral owners. Additionally, Figure 2-1 shows the proposed operations and maintenance areas and potential transportation access routes into site operations areas. Surface disturbances will be greatest in the operations areas; however, because of the nature of in situ recovery, surface disturbances will be spread throughout the permit area with a focus over the uranium ore. Approximately 1,600 acres will potentially be affected by the mining operation and associated disturbance. The following legal descriptions for the project comprise all properties included within the proposed mining area:

SW1/4 and W1/2 NW1/4 Section 28, Section 29, N1/2 and SE1/4 Section 30, E1/2 Section 31, Section 32, NW1/4 and SW1/4 and SE1/4 and S1/2NE1/4 Section 33, Section 34, and Section 35; T6S-R1E, Custer County.

Section 1, Section 2, Section 3, W1/4 Section 4, Section 5, Section 10, Section 11, Section 12, NW1/4 and W1/2 NE1/4 and NE1/4 NE1/4 Section 14, and N1/2 Section 15; T7S-R1E, Fall River County.

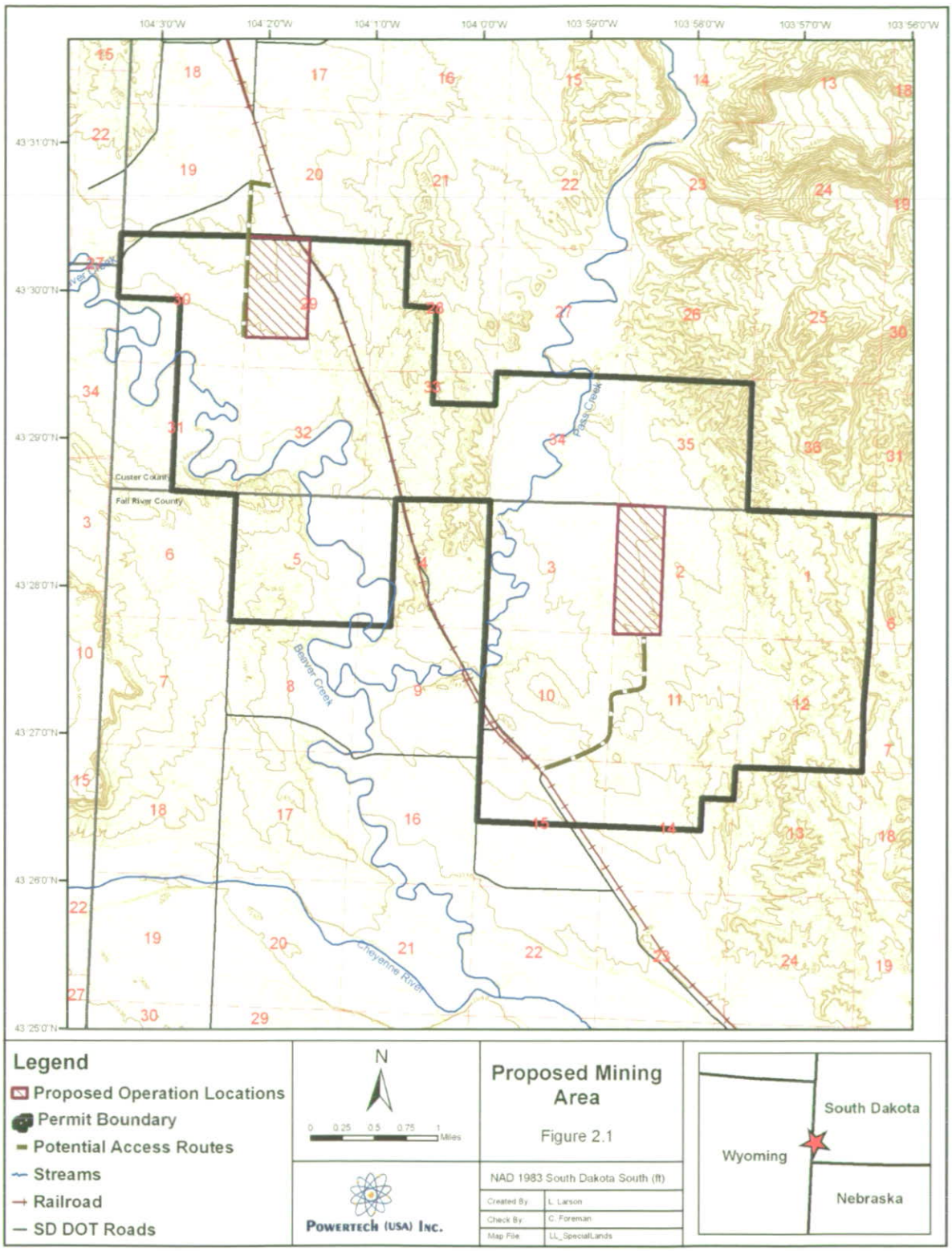

Figure 2-1. Proposed Mining Area With Proposed Facility Locations and Potential Access Routes to Those Facilities.

3.0 DESCRIPTION OF THE PROPOSED MINING OPERATION

Powertech proposes to construct and operate an in situ uranium mining operation on land known as the Dewey-Burdock property, located approximately 13 miles north-northwest of Edgemont, South Dakota. The property is accessed by Dewey Road which leads north from Edgemont through the permit area. The proposed operation will classify as a large-scale mine under South Dakota regulations. The proposed permit area will contain approximately 9,425 acres (see Figure 2-1). Approximately 1,600 acres will potentially be affected by the mining operation and associated disturbance.

In situ leaching, or recovery, of uranium is a method of mining that involves using injection wells to pump oxygen and carbon dioxide water into a deposit to dissolve the uranium and production wells to pump the uranium-laden fluids to the surface. The fluids are then processed at the surface to extract and concentrate the uranium. This type of mining is used for sedimentary-hosted uranium deposits that occur in permeable sandstone beds bound by lower permeability strata. In this mining method, the barren ore is left in the subsurface so there is little surface disturbance and no tailings or waste rock generated.

The uranium ore that underlies the Dewey-Burdock property lies in sandstone beds within the Cretaceous Inyan Kara Group. Pumping tests at both Dewey and Burdock were performed to define the hydrological characteristics of the ore zone. During the mining operation, a network of monitoring wells will be sampled to ensure that drilling fluids are contained and not impacting local aquifers.

The mining operation will be conducted sequentially with mining occurring in one or two mining units at a time. A mining unit is approximately a 10-acre plot along the uranium roll front. The solution-mining cell will be set up in a grid-like pattern consisting of alternating extraction and injection wells. Minor surface disturbances associated with well drilling will be primarily concentrated within a 400-foot buffer around the uranium roll fronts. Other disturbances include trenching for piping (buried deep enough to protect them from freezing) that will connect the production wells to header houses and the on-site processing facility. In an effort to minimize the total disturbed area, steep slopes will be avoided and existing access roads will be used where possible. After a well is drilled, all areas which were disturbed by the drilling operations, and which are not needed for production operations, will be reclaimed by removing equipment, backfilling drilling pits, and revegetating.

A typical well field will have 520 injection/recovery wells and 50 monitoring wells that are arranged dependent upon roll front geometry and hydraulic properties of the aquifer. The wells will be cased and cemented to ensure that fluids only flow into and out of the target ore zone and do not affect the surrounding water quality. During mining, production wells are pumped at a greater rate than the injections wells. The well locations combined with the injection/

extraction rates will create a cone of depression. This cone of depression will ensure that mining fluids migrate toward the recovery wells by maintaining hydraulic gradients toward the production wells. If mining solutions are detected in monitor wells surrounding the grid, the injection of fluids is adjusted and the nearby recovery wells are overpumped until the hydrologic control of fluids is reestablished.

After mining fluids are extracted from the formation, they will be piped to an on-site facility to extract the uranium from the solution. This process involves circulating the fluids through an ion exchange column where dissolved uranium is adsorbed onto resin beads. The uranium-coated resin will then be transferred to a central processing plant for further processing. At the central processing plant, the uranium is stripped from the loaded resin, precipitated and dried, yielding a uranium oxide product (U_3O_8) with a rich yellow color, called "yellowcake." Yellowcake is the final product produced at the site. In order to be converted to nuclear fuel, this product must go through an enrichment process at a different facility.

In situ mining circulates significant quantities of water through the ore zone but consumes only a small fraction of that amount since the water utilized in the process is extracted from and then reinjected back into the deposit. After circulating through the ion exchange columns, the water is repressurized, recharged with oxygen and carbon dioxide, and reinjected as recovery solution into the ore to continue mining. During operations, 1 to 3 percent of the solution extracted from the aquifer will be "bled" from the system to ensure a cone of depression is maintained and that no mining solutions are released from the recovery area.

This "bleed" or small waste stream will be treated to remove contaminants and directed to small-surface retention and evaporation ponds where solids will settle out. These ponds will be located in Section 2 and Section 29 and will be approximately 25 to 30 acres in size each, with three ponds in each section, for a total of six ponds. The pond will be created by excavating the area and lining the depression with two layers of high-density polyethylene. A leakage detection system will be installed below the pond linings to monitor for potential leaks in the polyethylene linings. The sludge from the pond will be recovered, dried, packaged, and transported to a United States Nuclear Regulatory Commission- (US NRC-) licensed disposal facility.

Reclamation will begin as soon as each mining unit has been depleted of uranium. When one mine unit is depleted, it will be reclaimed at the same time mining continues in another mining unit along the ore front. The main focus of restoration is returning the groundwater quality to baseline conditions or class of use, as appropriate.

Groundwater restoration involves pumping water from selected wells to flush contaminants out of the formation, known as the groundwater sweep. In aboveground treatment, contaminants from the water will be removed before the water is recirculated through the

aquifer. During this process, the aquifer returns to a reduced state, thus precipitating any metals or salts that became mobilized during the recovery phase of mining.

After the aquifer is restored in each mine unit, wells will be permanently plugged and abandoned. In the final stages of restoration and decommissioning, pipes are removed from the ground; surface processing facilities (including evaporation ponds) are removed; and disturbed areas are graded, topsoiled, and revegetated with state-approved grass seed mixtures. The reclaimed land can readily revert to its premining land use of livestock pasture without any long-term surface impacts of mining.

Once mining begins on this project, it is anticipated the currently known ore reserves will be mined out within 10 to 15 years. Restoration activities will likely extend 2 to 4 years beyond the end of the uranium-recovery phase. Final approval for closure is expected to occur 4 years after the end of active uranium recovery. The actual mining schedule may vary depending on the extent of uranium reserves found during mining as well as market conditions.

4.0 DEFINING IF LAND IS SPECIAL, EXCEPTIONAL, CRITICAL, OR UNIQUE

To meet US NRC and SD DENR license and permit requirements, a baseline environmental monitoring program, including the following, was initiated:

- Wildlife and fishery surveys (Appendix B).
- Baseline soils, vegetation, (Appendix C), and wetlands surveys.
- Baseline hydrology and water-quality studies, including both surface and groundwater resources.
- Cultural resources including an archaeological survey.
- Baseline radiological studies including air particulate sampling, soils, vegetation, and food radionuclide.

This section provides a summary of results of the baseline environmental studies to date. The detailed findings from these assessments will be submitted with the Large-Scale Mine Permit.

4.1 SCENIC

The land within the permit boundary is similar to surrounding land. The predominant land use is rangeland for cattle with the remaining area consisting of forest and minor croplands. The area encompassing the project site is grass and sagebrush-covered plains interspersed with ponderosa pine-covered slopes. Surrounding the project area, a number of scenic canyon formations exist. Although the characteristics of these features provide aesthetic appeal, they are similar to surrounding lands and none are unique to the area.

Visual impacts of the mining operation will be minimal. It is anticipated that well houses and the surface ion exchange facility may be visible from Dewey Road. The nearest major highway, Highway 18, is about 13 miles south of the project site and is not visible from the site.

An aesthetic and scenic-quality evaluation of the project site area was conducted in accordance with the Bureau of Land Management (BLM) Handbook H-8410-1, *Visual Resource Inventory* [Bureau of Land Management, 2008] license application. The landscape within the approximate 9,425-acre Dewey-Burdock license/permit area and the surrounding 2-mile area was rated in accordance with the above-referenced BLM handbook. Two Scenic Quality Rating Units representing the Great Plains Physiographic Province and the Black Hills Uplift were identified. Based on the following criteria: (1) scenic quality, (2) sensitivity level, and (3) distance zones, the area was rated as a Visual Resource Management (VRM) Class IV. This

class allows for the management of major modifications of the existing character of the landscape. The level of change permitted for this class can be high. In addition, the scenic-quality rating of both the Scenic Quality Resource Units was below 19; therefore, according to the US NRC NUREG-1569, no special management is required.

4.2 HISTORIC

A Level III Cultural Resources Evaluation was conducted in the project area. Personnel from the Archeology Laboratory, Augustana College (Augustana), Sioux Falls, South Dakota, conducted on-the-ground field investigations between April 17 and August 3, 2007.

Augustana documented 161 previously unrecorded archaeological sites and revisited 29 previously recorded sites during the current investigation. Expansion of site boundaries during the 2007 survey resulted in a number of previously recorded sites being combined into a single, larger site. Twenty-eight previously recorded sites were not relocated during the current investigation. Excepting a small foundation, the sites not relocated were previously documented as either prehistoric isolated finds or diffuse prehistoric artifact scatters.

Approximately 87 percent of the total number of sites recorded are prehistoric. Historic sites comprise approximately 5 percent of total sites recorded, while multi-component (prehistoric/ historic)sites comprise the remaining 8 percent.

The small number of Euroamerican sites documented was not unanticipated given the peripheral nature of the project area in relation to the Black Hills proper. The disparity existing between the number of historic and prehistoric sites observed in the project area is also not unexpected; however, the sheer volume of sites documented in the area is noteworthy. The land evaluated as part of the Level III cultural resources evaluation has an average site density of approximately 1 site per 8.1 acres. Even greater site densities were reported in 2000 during the investigation of immediately adjacent land parcels for the Dacotah Cement/BLM land exchange [Winham et al., 2001]. This indicates that the permit area is not unique, in regards to the number of documented sites, and is typical of the periphery of the Black Hills.

The high density of sites observed in the project area, specifically those of prehistoric affiliation, is both consistent with previous findings in the immediate vicinity [Winham et al., 2001] and strongly indicative of the intense degree to which this landscape was being exploited during prehistoric times. Data indicate a slight rise in the number of sites observed from earlier periods into the Middle Plains Archaic, and then a major increase into the Late Plains Archaic/Plains Woodland period before an equally significant drop-off into Late Prehistoric times. In general, this trend is largely consistent with the majority of available paleodemographic data from the region [Rom et al., 1996]. Despite the high density of sites within the permit area, there is a lack of evidence indicative of extended or long-term

settlement localities in the region. Though the reason behind this phenomenon remains unclear, the bulk of preliminary data from the current investigation appear to mirror this trend.

The landscape comprising the project area is erosional in nature, leading to many sites being heavily deflated. The extent of the erosion processes is evidenced by the large number of sites recommended by Augustana as not eligible for listing on the National Register of Historic Places because of their location on deflated landforms. This equates to approximately half of the total number of identified sites in the project area. Notable exceptions to these deflated localities include the valleys and terraces along Beaver and Pass Creeks, as well as many places within and adjacent to, some of the more heavily wooded areas.

Nearly 200 hearths were identified within 24 separate site areas during Augustana's investigation. These features varied considerably from one another in both size and form (and likely function in many cases) and ranged from fully intact to completely eroded. Previous research in the nearby area has demonstrated a similar pervasiveness of such features in the archaeological record [Buechler, 1999; Lippincott, 1983; Reher, 1981; Sundstrom, 1999; Winham et al., 2001], and specifically in relation to Plains Archaic-period site assemblages [Rom et al., 1996]. Radiocarbon data obtained from a number of these hearths produced dates ranging from approximately 3,150–1,175 before present (B.P.) (UGa-4080 and UGa-4081), with the majority of these samples dating to Middle and Late Plains Archaic times [Reher, 1981].

Protection by way of avoidance of archaeological sites was maintained during the exploration phase of the project, and site avoidance is the continued goal during development and mining. Where required, sites in the area of mining activity will be flagged and/or fenced and mining personnel will be made aware of their presence. In the event that a new site is discovered, the site will be protected and the state archaeologist will be notified. Powertech has been working closely with the state of South Dakota's Archaeological Research Center, and will continue to do so throughout the life of this project. Powertech is working on a Memorandum of Agreement with the state archaeologist in order to ensure the preservation of any historical sites that may be present within the permit area. The Memorandum of Agreement will be forwarded to the SD DENR, as soon as it is complete.

4.3 ARCHAEOLOGICAL

Archaeology was previously discussed in Section 4.2 titled *Historic*.

4.4 TOPOGRAPHIC

The proposed permit lands lie along the southwestern flank of the Black Hills. The topography is steepest along the eastern side of the project where rock outcrops; the land

becomes gently rolling to nearly flat to the west, at the western extent of the permit area. Elevations on the site range from 3,550 to 4,110 feet. Drainages on the site include Beaver Creek, Pass Creek, and Bennett Canyon. These intermittent and ephemeral drainages are tributaries to the Cheyenne River. There is nothing significant about the topography of the Dewey-Burdock project in that it is similar with the topography of the western flank of the Black Hills.

4.5 GEOLOGIC

The Dewey-Burdock project is located on the southwestern flank of the Black Hills Uplift in the southwest corner of South Dakota. The Powder River Basin is located to the west and southwest of the project area. The stratigraphy in the region consists of Precambrian rocks near the center of the uplift with rocks becoming progressively younger toward the Powder River Basin. Within the project area, the rocks range in age from Cretaceous through recent.

Mining on the proposed permit land will consist of in situ mining for uranium in the Fall River and Lakota Formations of the Inyan Kara Group. The Inyan Kara Group consists of complexly interbedded sandstone, siltstone, and claystone. These rocks were deposited in continental to marginal marine environments. After the uplift of the Black Hills, the uranium was introduced into the Inyan Kara as a result of leaching out of the White River Group volcanic deposits. The depth of the top of the Inyan Kara on the Dewey-Burdock project ranges from zero at the outcrop to approximately 600 feet below the surface along the western portion of the site. The Inyan Kara Group is overlain by the marine Skull Creek Shale of Lower Cretaceous age and is underlain by Jurassic age Morrison Formation shale. The area is not considered to be geologically unique as similar rock outcrops and subsurface geology occurs surrounding the entire Black Hills.

Uranium mining occurred in this area shortly after it was discovered to be a northern extension of the Edgemont uranium district in the 1950s. Three open-pit uranium mines (Darrow, Triangle, Spencer-Richardson) are located on the Fall River outcrop within the Dewey-Burdock site with two other pits located just northeast of the project boundary. The proposed project will utilize in situ recovery methods as described above; therefore, activities will not reflect those of historical mining that included open pits and/or tailings piles.

Exploration drilling was conducted in the 1960s, 1970s, 2007, and 2008 on the proposed permit land. The deepest logs extend to depths of approximately 1,000 feet penetrating the Belle Fourche shale through the Sundance Formations. The drill logs do not indicate any special or unique geologic characteristics.

4.6 ETHNOLOGIC

Ethnology was previously discussed in Section 4.2 titled *Historic*.

4.7 SCIENTIFIC

The following sections summarize the results of environmental baseline studies conducted by Powertech.

4.7.1 Vegetation

Four major vegetation communities are located within the project area: big sagebrush shrubland, greasewood shrubland, ponderosa pine woodland, and upland grassland. Big sagebrush shrubland communities are dominated by blue grama, buffalograss, and big sagebrush. The greasewood shrubland is dominated by greasewood and western wheatgrass. The ponderosa pine community contains ponderosa pine, rocky mountain juniper, and big sagebrush. Upland grassland communities are dominated by buffalograss, blue grama, and western wheatgrass. The majority of the area is covered by the big sagebrush and greasewood communities. Flora on the site are adapted to withstand a wide range of temperature, humidity, sunlight, and wind conditions and are similar to those observed throughout the southwestern Black Hills area.

The state of South Dakota has only one federally listed threatened plant species, the Western Prairie Fringed Orchid (Platanthera praeclara). The results of the field surveys in 2007 and 2008 found no individuals of the Western Prairie Fringed Orchid within or adjacent to the Dewey-Burdock Uranium Project area. Additionally, no potential habitat for the Western Prairie Fringed Orchid was found within or adjacent to the Dewey-Burdock Uranium Project area. The results of the field surveys in 2007 and 2008 also found none of the sensitive species or species of local concern within or adjacent to the Dewey-Burdock uranium project area.

4.7.2 Surface Soils

Results from the 2007 soils assessment indicate that the proposed mining area is characterized by fine-textured soils, such as Pierre, Grummit, Kyle, Tilford, as well as salt-affected soils, such as Arvada and Hisle. All soils are common throughout the southwestern Black Hills area. The habitat on the proposed permit area is typical of the surrounding region and no special, exceptional, critical, unique, or unusual features are present.

Radium-226 concentrations in soils collected at the site were compared to regional and U.S. concentrations determined by researchers at Oak Ridge National Laboratories (ORNL) [Myrick

et al., 1983]. Radium-226 concentrations at the Dewey-Burdock site are similar to those obtained regionally and nationally.

4.7.3 Wildlife

Wildlife surveys in the Dewey-Burdock project area (proposed permit area and 1-mile perimeter) conducted from June 2007 through mid-July 2008 have been completed. Numerous common vertebrate species were recorded during that period. Mammals present in the area include, but are not limited to, big game such as antelope, deer, and elk; predators and furbearers such as the coyote, red fox, bobcat, beaver, raccoon, badger, and striped skunk; and small and medium-sized mammals, such as the porcupine, jackrabbits, cottontails, prairie dogs, pocket gophers, and several rodent species. A wide variety of common avian species are also present in the area either as seasonal or year-long residents or as migrants passing through the area. Avian species include, but are not limited to, various raptors such as hawks, owls, eagles, and vultures; woodpeckers, waterfowl, and shorebirds; wild turkeys and mourning doves; and numerous songbirds.

No federally listed vertebrate species have been documented in the Dewey-Burdock survey area (permit area and 1-mile perimeter) during the year-long survey period. The black-footed ferret (Mustela nigripes) was the only federally threatened and endangered vertebrate species that could potentially occur in the project area. The U.S. Fish and Wildlife Service issued a block-clearance for ferrets throughout the entire state of South Dakota in recent years, including the Dewey-Burdock survey area in extreme southwestern Custer County and northwestern Fall River County. The only exception to that clearance is in Custer State Park in northern Custer County.

The state of South Dakota lists 23 vertebrate species as threatened or endangered:

- Threatened: 4 fish, 4 birds, 2 mammals, 1 snake, and 1 turtle.
- Endangered: 5 fish, 4 birds, 1 mammal, and 1 snake.

The current list of these state species is available on the South Dakota Game, Fish and Parks (SD GFP) Web site *<http://www.sdgfp.info/Wildlife/Diversity/TES.htm>*.

Only 1 of those 23 state-level threatened and endangered species was documented within the proposed Dewey-Burdock permit area or 1-mile survey perimeter during the survey period (June 2007 through July 2008, ongoing). Individual bald eagles (Haliaeetus leucocephalus) (state-threatened species) were repeatedly observed along Beaver Creek in the western portion of the proposed permit area during winter roost surveys conducted in late 2007 and early 2008. One active bald eagle nest is located in SE¼ SW¼ Section 30, Township 6 South, Range 1 East. The nest is in a cottonwood (Populus spp.) tree along Beaver Creek west of the proposed permit

boundary. The nest had at least one large, mostly-feathered young in the nest in mid-June 2008.

A list of other vertebrate species of interest or concern tracked by the South Dakota Natural Heritage Program was provided by Mr. Stan Michals (SD GFP) in July 2007. To date, six additional vertebrate sensitive species or species of local concern have been documented within the proposed Dewey-Burdock permit area: the long-billed curlew (Numenius americanus), golden eagle (Aquila chrysaetos), merlin (Falco columbarius), Cooper's hawk (Accipiter cooperii), American white pelican (Pelecanus erythrorhynchos), and long-eared owl (Asio otus). The long-eared owl and curlew are known or are suspected to have nested in the permit area, based on evidence (young present) or persistent defensive behavior, respectively. The golden eagle, merlin, Cooper's hawk, and pelican were merely observed flying over the area; each of those four species was recorded only once to date. All six additional species of special interest are considered as secure populations within their respective overall ranges, though one or more could be less common in parts of a given range, especially in the periphery. Likewise, all six are considered to be either rare and local throughout their statewide ranges, or locally abundant in restricted portions of those ranges.

Aquatic species inventories were also conducted according to SD GFP guidelines. Several common fish species were recorded in Beaver Creek, which flows through the western portion of the survey area. The most common species include the fathead minnow, green sunfish, and channel catfish. Other less common fish species included the long-nosed dace and plains killifish. The most common aquatic macroinvertebrates were from the family Physidae (snails) and Chironomidae. No aquatic species of concern were documented in Beaver Creek during surveys completed to date.

In summary, no federally listed vertebrate species occur in the Dewey-Burdock project area. Therefore, in situ uranium development in the area will have no adverse impacts on these species. Potential impacts and proposed mitigation measures related to the presence of three other nesting species of concern (bald eagle, long-billed curlew, long-eared owl) will be addressed in the US NRC license and SD DENR permit application documents (see Appendix B).

4.7.4 Surface Water

Surface water resources on the proposed permit consist of small stock ponds, mine pits, and two creeks. There are 25 stock ponds within the proposed permit area, the majority of which tend to be dry except after rainfall events. Unreclaimed uranium mine pits, including the Triangle and Darrow Mines, also contain water. Based on water-quality results, it is likely that the water in the Triangle Mine is the exposed groundwater table of the Inyan Kara aquifer in that area. Surface drainage on the site is generally southwest toward Beaver Creek, a tributary of the Cheyenne River. Beaver Creek itself is fed by Stockade Beaver, Line, and Hay

Creeks. Pass Creek bisects the Dewey-Burdock area and drains into Beaver Creek. The easternmost area of the site is drained by Bennett Canyon, another northern tributary of the Cheyenne. All of the streams in and surrounding the project area, including the Cheyenne River, experience extended periods of no flow.

4.7.5 Groundwater

The aquifers in the Dewey-Burdock area are similar to those throughout the Black Hills and are not evidently special, exceptional, critical, or unique resources. Regionally, the area is underlain by four principal aquifers: Quaternary alluvium, the Inyan Kara Group, the Sundance Formation, and the Madison. Locally, where present, the Unkpapa may also serve as an aquifer. These formations receive recharge where they crop out on the periphery of the Black Hills with water movement generally toward the southwest. Where present, the shallowest aquifer is the alluvium. Several hand-dug alluvial wells are located within and near the site although all have been abandoned. Five alluvial monitor wells were installed in 2007 to monitor baseline conditions. Below the Inyan Kara are the Unkpapa and Sundance Aquifers; in the Dewey-Burdock area there are a few wells into these aquifers although they are not widely used in the Black Hills because of low yields. There is no well control in the project area, but based on general formation thicknesses throughout the region, the Madison Limestone lies approximately 1,000 feet or more below the Inyan Kara. The town of Edgemont obtains the majority of its water from Madison wells that are artesian and exhibit high-water temperatures.

The aquifer of greatest interest in the Dewey-Burdock area is the Inyan Kara, which locally is both ore- and water-bearing. In situ leaching of uranium will be conducted within this confined aquifer on the Dewey-Burdock property. Away from the outcrop, the water is under artesian conditions with several wells in the area free flowing. For decades, it has been common practice to allow free-flowing wells to continually discharge. Groundwater mining will not occur from mining-related activities as mining is expected to use (bleed) only about 120 gallons per minute. In an effort to balance mining water usage, it has been proposed that a few "wild" wells in the area be either plugged or shut in. Whatever action is taken, the main objective is water conservation.

Currently, there are three domestic and eleven stock wells within the proposed permit area that utilize water from the Inyan Kara. Before mining begins, wells within the exempted areas will be abandoned. A comprehensive baseline study has begun to periodically measure water levels and analyze groundwater samples. Preliminary results show elevated levels (well above drinking water standards) of radon gas in most wells. Water levels and chemistry of wells outside the exempted regions are not anticipated to be affected by mining activities.

Mined areas will be reclaimed following the groundwater restoration phase described above. Thereafter, plumbing and surface facilities will be removed and the ground reclaimed.

4.8 CULTURAL

Culture was previously discussed in Section 4.2 titled *Historic*.

4.9 RECREATIONAL

Recreational use within the project boundary is primarily limited to hunting and trapping. Within and surrounding the project area, hunting is open to the public on BLM and National Forest Service (NFS) lands while private land owners may restrict recreational activities.

Because of low flows and turbid water conditions, fishing and other water-based recreational activities on streams within the project vicinity is very limited. Nearby major regional recreation areas include Buffalo Gap National Grassland and the Black Hills National Forest.

Anticipated mining impacts may include the increased use of regional recreation facilities and pressure on wildlife resources from in-moving project employees. However, land within the project boundary itself is not considered recreational and project-related effects on regional recreation opportunities are expected to be minor.

5.0 SUMMARY AND CONCLUSIONS

Environmental and cultural resources studies were performed in accordance with US NRC and SD DENR regulations. It is Powertech's intention with this submittal to the SD DENR to assist the state of South Dakota in determining the presence of special, exceptional, critical, or unique land.

The following conclusions resulted from these studies:

- The proposed in situ leach mining operation will have minimal impact on the natural and cultural resources within and adjacent to the proposed permit area when compared to conventional surface mining and milling operations.
- The projected mining operations will impact less than one-third of the total permit area.
- Per state guidelines, the site-specific baseline studies do not indicate that the proposed permit area has significant scenic, historic, archaeological, topographic, geologic, ethnologic, scientific, cultural, or recreational value.
- The proposed mine area is suitable for mining operations.

6.0 REFERENCES

Buechler, J. V., 1999. *An Intensive (Class III) Cultural Resources Inventory Survey of the Dacotah Cement Land Exchange Proposal in Southwestern Custer County, South Dakota*, Project No. 99-9, Dakota Research Services, Rapid City, SD, for Dacotah Cement, Rapid City, SD.

Bureau of Land Management, 2008. *Manual H-8410-1 Visual Resource Inventory*, prepared by U.S. Department of the Interior Bureau of Land Management, retrieved July 1, 2008, from the World Wide Web: http://www.blm.gov/nstc/VRM/8410.html#Anchor-49575

Lippincott, K., 1983. *A Cultural Resources Survey of Uranium Properties and Drill Holes in Custer and Fall River Counties, South Dakota*, Tennessee Valley Authority, Casper, WY.

Myrick, T. E., B. A. Berven, and F. F. Haywood, 1983. "Determination of Concentrations of Selected Radionuclides in Surface Soil in the U.S.," *Health Physics*, Vol. 45, pp. 631–342.

Reher, C. A., 1981. *Summary Report: Archaeological Survey and Testing Project for the Silver King Mine–Tennessee Valley Authority: Fall River County, Custer County, South Dakota and Weston County, Wyoming*, prepared by Research, Inc., Laramie, WY, for the Tennessee Valley Authority, Casper, WY.

Rom, L., T. Church, and M. Church (editors), 1996. *Black Hills National Forest Cultural Resources Overview," Black Hills National Forest Supervisor's Office, Custer, South Dakota*, U.S. Department of Agriculture, Forest Service, Black Hills National Forest, Custer, SD.

Sundstrom, L., 1999. *Living on the Edge: Archaeological and Geomorphological Investigations in the Vicinity of Tepee and Hell Canyons, Western Custer County, South Dakota*, prepared for the State Historical Preservation Center, Pierre, SD.

Winham, R. P., E. J. Lueck, L. Palmer, and F. Sellet, 2001. *An Intensive (Class III) Cultural Resources Inventory Survey of the Dacotah Cement Land Exchange Proposal With the Bureau of Land Management in Southwestern Custer County, South Dakota*, Archeological Contract Series No. 164, prepared by Archeology Laboratory, Augustana College, Sioux Falls, SD, for GCC Dacotah, Rapid City, SD.

APPENDIX A

SURFACE AND MINERAL OWNERS

APPENDIX A
SURFACE AND MINERAL OWNERS

SURFACE OWNERS

Bakewell-Andis Ranch, LLP
16730 East Inca Avenue
Fountain Hills, AZ 85268-4524

Chris and Amy Daniel
550 E. Sawgrass Trail
Dakota Dunes, SD 57049

Daniel Properties, LLC
c/o Chris Daniel
550 E. Sawgrass Trail
Dakota Dunes, SD 57049

Everett and Dawn Englebert
27449 Dewey Road
Burdock, SD 57735

GCC Dacotah, Inc.
501 North St. Onge Street
Rapid City, SD 57702

w/ a copy to
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Gunderson, Palmer, Goodsell & Nelson
P.O. Box 8045
Rapid City, SD 57709-8045

Estate of Herman P. Heck
Attn: Keith Campbell
2630 Jackson Blvd
Rapid City, SD 57702

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c/o Wayne Peterson
27389 Burdock Loop
Edgemont, SD 57735

Putnam & Putnam, LLP
c/o John A. Putnam
778 Cedar Street
Dewey, SD 57735

Putnam & Putnam Partnership
c/o John A. Putnam
778 Cedar Street
Dewey, SD 57735

Donald and Pat Spencer
27269 Elbow Canyon Rd.
Edgemont, SD 57735-7613

U.S. Department of the Interior Bureau of Land Management
310 Roundup St.
Belle Fourche, SD 57717

MINERAL OWNERS

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Donald and Pat Spencer
27269 Elbow Canyon Rd.
Edgemont, SD 57735-7613

SURFACE OWNERS WITHIN 500 FEET (NOT PREVIOUSLY LISTED)

Hell Canyon Ranger District, BHNF
1225 Washington
Newcastle, WY 82701

Clayton J. Sander
12469 Willow Creek
Custer, SD 57730

South Dakota School and Public Lands (land adjacent to project)
500 East Capital Ave.
Pierre, SD 57501

Craig Stodart
HCR 59 Box 42
Edgemont, SD 57735

APPENDIX B

LETTER FROM JONES & STOKES ON WILDLIFE

Jones & Stokes

1901 Energy Court, Suite 115 • Gillette, WY 82718 • phone/fax (307) 686-6178
gmckee@jsanet.com

July 2, 2008

Mr. Richard E. Blubaugh
Vice President
Powertech (USA) Inc.
5575 DTC Parkway, Suite 140
Greenwood Village, Colorado 80111

Dear Mr. Blubaugh:

Jones & Stokes Associates, Inc. (formerly Thunderbird-Jones & Stokes) has been conducting baseline wildlife and fisheries field surveys in 2007 and 2008 in support of Unites States Nuclear Regulatory Commission licensing and State of South Dakota Department of Environment and Natural Resources permitting of the Dewey-Burdock In-Situ Uranium Project. Those surveys included vertebrate species listed as threatened or endangered (T&E) at the federal and/or state level, and species of concern tracked by the South Dakota Natural Heritage Program (SDNHP).

No federally listed vertebrate species have been documented in the Dewey-Burdock survey area (permit area and one-mile perimeter) during the year-long survey period. The black-footed ferret (*Mustela nigripes*) was the only federal T&E vertebrate species that could potentially occur in the project area. The U.S. Fish and Wildlife Service issued a block-clearance for ferrets throughout the entire state of South Dakota in recent years, including the Dewey-Burdock survey area in extreme southwestern Custer County and northwestern Fall River County. The only exception to that clearance is in Custer State Park in northern Custer County.

The State of South Dakota lists 23 vertebrate species as threatened or endangered:

- Threatened: 4 fish, 4 birds, 2 mammals, 1 snake, and 1 turtle;
- Endangered: 5 fish, 4 birds, 1 mammal, and 1 snake.

The current list of these state species is available on the South Dakota Game, Fish and Parks (SDGFP) website: http://www.sdgfp.info/Wildlife/Diversity/TES.htm

Only 1 of those 23 state-level T&E species has been documented within the proposed Dewey-Burdock permit area or one-mile survey perimeter during the survey period (June 2007 through July 2008, ongoing). Individual bald eagles (*Haliaeetus leucocephalus*) (state threatened species) were repeatedly observed along Beaver Creek in the western portion of the proposed permit area and perimeter during winter roost surveys conducted in late 2007 and early 2008. One active bald eagle nest is located in mid-SW¼ Section 30, Township 6 South, Range 1 East. The nest is in a cottonwood (*Populus* spp.) tree along Beaver Creek approximately 0.25 mile west of the proposed permit boundary. The nest had at least one large, mostly-feathered young in the nest in mid-June 2008.

A list of other vertebrate species of interest or concern tracked by the SDNHP was provided by Mr. Stan Michals (SDGFP) in July 2007. To date, six additional vertebrate sensitive species or species of local concern have been documented within the proposed Dewey-Burdock permit area: the long-billed curlew (*Numenius americanus*), golden eagle (*Aquila chrysaetos*), merlin (*Falco columbarius*), Cooper's hawk (*Accipiter cooperii*), American white pelican (*Pelecanus erythrorhynchos*), and long-eared owl (*Asio otus*). The long-eared owl and curlew are known or are suspected to have nested in the permit area, based on evidence (young present) or persistent defensive behavior, respectively. The golden eagle, merlin, Cooper's hawk, and pelican were merely observed flying over the area; each of those four species was recorded only once to date. All six additional species of special interest are considered as secure populations within their respective overall ranges, though one or more could be less common in parts of a given range, especially in the periphery. Likewise, all six are considered to be either rare and local throughout their statewide ranges, or locally abundant in restricted portions of those ranges.

In summary, the presence of these three nesting species of concern (bald eagle, long-billed curlew, long-eared owl) within the proposed permit area should not preclude development of the Dewey-Burdock Uranium Project. We will address potential impacts and proposed mitigation measures related to these species in the USNRC license and DENR permit application documents.

If you have any questions or comments, please do not hesitate to contact me at 307-686-6178 or gmckee@jsanet.com.

Sincerely,

Gwyn McKee
Technical Director/Senior Wildlife Biologist

cc. Paul Bergstrom (Knight Piesold and Company)

APPENDIX C

LETTER FROM BKS ENVIRONMENTAL ASSOCIATES, INC. ON VEGETATION

BKS Environmental Associates, Inc.

June 30, 2008

Mr. Richard E. Blubaugh
Vice President
Powertech (USA) Inc.
5575 DTC Parkway, Suite 140
Greenwood Village, Colorado 80111

Dear Mr. Blubaugh:

BKS Environmental Associates, Inc. (BKS) conducted baseline vegetation field surveys in 2007 and 2008 in support of Unites States Nuclear Regulatory Commission licensing and state of South Dakota Department of Environment and Natural Resources permitting of the Dewey-Burdock In-Situ Uranium Project. The state of South Dakota has only one federally listed threatened (T) plant species, the western prairie fringed orchid (*Platanthera praeclara*). The results of the field surveys in 2007 and 2008 found no individuals of the western prairie fringed orchid within or adjacent to the Dewey-Burdock Uranium Project area. Additionally, no potential habitat for the western prairie fringed orchid was found within or adjacent to the Dewey-Burdock Uranium Project area.

A list of potential sensitive and/or species of local concern was provided by Dave Ode (DENR) to BKS on June 19, 2007. The results of the field surveys in 2007 and 2008 found none of the sensitive species or species of local concern within or adjacent to the Dewey-Burdock Uranium Project area.

If you have any questions or comments, please do not hesitate to contact me at 307-686-0800 or bschladweiler@bksenvironmental.com.

Sincerely,

Brenda K Schladweiler

Brenda Schladweiler, Ph.D.
BKS Environmental Associates, Inc.

cc. Paul Bergstrom (Knight Piesold and Company)

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(307) 686-0880 Fax

www.bksenvironmental.com

P.O. Box 3017
Rock Springs, WY 82902-3017
(307) 922-1703

POWERTECH (USA) INC.

August 20, 2008

Ms. Frances Larsen
Custer County Register of Deeds
420 Mt. Rushmore Road
Custer, SD 57730

Dear Ms. Larsen:

RE: Dewey-Burdock Large-Scale Mining Permit

Powertech (USA) Inc. will be submitting a large scale mining permit application to the South Dakota Dept. of Environment and Natural Resources. The first step in the permitting process is filing a Request for Determination of Special, Exceptional, Critical, or Unique Lands and Notice of Intent to Operate form. Enclosed is a copy of the information being submitted to the state. It contains the form, a map showing the proposed permit land, narratives describing the mining operation, and assessment of special, exceptional, critical, or unique status. Please have these documents available in your office for public viewing.

Sincerely,

Mark Hollenbeck
Project Manager

MH:llf

Enclosure

cc: Project Central File 1764 — Category A

The Custer County Register of Deeds Office has the above information on file.

Frances M Larsen
Signature

August 20, 2008
Date

DEWEY-BURDOCK
POWERTECH (USA) INC. URANIUM PROJECT

Dewey-Burdock Operations Office
310 Second Avenue - PO Box 812 - Edgemont, SD 57735
605-662-8308 www.powertechuranium.com

POWERTECH (USA) INC.

August 20, 2008

Ms. Anita Gilkey
Fall River County Register of Deeds
906 N. River Street
Hot Springs, SD 57747

Dear Ms. Gilkey:

RE: Dewey-Burdock Large-Scale Mining Permit

Powertech (USA) Inc. will be submitting a large scale mining permit application to the South Dakota Dept. of Environment and Natural Resources. The first step in the permitting process is filing a Request for Determination of Special, Exceptional, Critical, or Unique Lands and Notice of Intent to Operate form. Enclosed is a copy of the information being submitted to the state. It contains the form, a map showing the proposed permit land, narratives describing the mining operation, and assessment of special, exceptional, critical, or unique status. Please have these documents available in your office for public viewing.

Sincerely,

Mark Hollenbeck
Project Manager

MH:llf

Enclosure

cc: Project Central File 1764 — Category A

The Fall River County Register of Deeds Office has the above information on file.

Anita Gilkey
Signature

August 21, 2008
Date

DEWEY-BURDOCK
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